

In the Claims

1-49. (Canceled)

50. (Currently Amended) An isolated polypeptide comprising SEQ ID NO: 2 ~~selected from the group consisting of:~~

- ~~—— a) —— a polypeptide comprising a span of at least ten amino acids of amino acids 589 to 643 of SEQ ID NO: 2;~~
- ~~—— b) —— a polypeptide comprising amino acids 589 to 643 of SEQ ID NO: 2;~~
- ~~—— c) —— a polypeptide comprising amino acids 545 to 643 of SEQ ID NO: 2;~~
- ~~—— d) —— a polypeptide comprising SEQ ID NO: 2;~~
- ~~—— e) —— a polypeptide comprising SEQ ID NO: 4;~~
- ~~—— f) —— a polypeptide comprising SEQ ID NO: 6;~~
- ~~—— g) —— a mutein of any of (a) to (f), wherein the amino acid sequence has at least 50% or 60% or 70% or 80% or 90% or 95% or 99% identity to at least one of the sequences in (a) to (f);~~
- ~~—— h) —— a mutein of any of (a) to (f) which is encoded by a DNA sequence which hybridizes to the complement of the DNA sequence encoding any of (a) to (f) under moderately stringent conditions or under highly stringent conditions; and~~
- ~~—— i) —— a mutein of any of (a) to (f) wherein any changes in the amino acid sequence are conservative amino acid substitutions to the amino acid sequences in (a) to (f).~~

51. (Currently Amended) The polypeptide according to claim 50, wherein said polypeptide ~~is capable of binding~~ binds to the B γ subunit of the PP2A phosphatase.

52. (Currently Amended) ~~A potassium channel~~ An isolated potassium channel comprising at least one polypeptide comprising SEQ ID NO: 2 of claim 50.

53. (Currently Amended) The isolated potassium channel according to claim 52, wherein said potassium channel is a homomeric channel ~~comprised of polypeptides of claim 50 comprising a plurality of polypeptides.~~

54. (Currently Amended) A purified polynucleotide encoding the polypeptide of ~~claim 50~~ SEQ ID NO: 2, or a polynucleotide fully complementary thereto.

55. (Currently Amended) The polynucleotide according to claim 54, wherein said polynucleotide ~~comprises SEQ ID NO: 1 or a polynucleotide fully complementary thereto~~ is selected from the group consisting of:

- ~~_____ a) _____ a polynucleotide comprising nucleotides 1776 to 1929 of SEQ ID NO: 2;~~
- ~~_____ b) _____ a polynucleotide comprising nucleotides 1632 to 1929 of SEQ ID NO: 2;~~
- ~~_____ c) _____ a polynucleotide comprising SEQ ID NO: 1;~~
- ~~_____ d) _____ a polynucleotide comprising SEQ ID NO: 3;~~
- ~~_____ e) _____ a polynucleotide comprising SEQ ID NO: 5;~~
- ~~_____ f) _____ a polynucleotide complementary to the polynucleotides of (a) to (e).~~

56. (Previously Presented) An expression vector comprising the polynucleotide of claim 54.

57. (Previously Presented) The expression vector according to claim 56, wherein said vector is a gene therapy vector.

58. (Previously Presented) A host cell comprising the expression vector of claim 56.

59. (Previously Presented) A method of making a polypeptide, said method comprising the steps of culturing a host cell according to claim 58 under conditions suitable for the production of a polypeptide.

60. (Previously Presented) The method according to claim 59, further comprising the step of purifying said polypeptide from the culture.

61. (Canceled)

62. (Currently Amended - Withdrawn) A method of screening candidate compounds for a modulator of the KCNQ2 polypeptide comprising the steps of:

- a) contacting a KCNQ2 polypeptide comprising SEQ ID NO: 2 with ~~awith~~ the candidate compound; and
- b) testing the activity of said KCNQ2 polypeptide in the presence of said candidate compound,

wherein a difference in the activity of said KCNQ2 polypeptide in the presence of said compound in comparison to the activity in the absence of said compound indicates that the compound is a modulator of said KCNQ2 polypeptide.

63. (Withdrawn) The method according to claim 62, wherein said candidate modulator compound is selected from the group consisting of a natural ligand, a small molecule, an antibody, an antisense RNA, an aptamer and a short interfering RNA.

64-86. (Canceled)

87. (New). A composition comprising at least one polypeptide comprising SEQ ID NO: 2.

88. (New) The composition according to claim 87, wherein said composition comprises a plurality of polypeptides.

89. (New) The composition according to claim 88, wherein said plurality of polypeptides forms a potassium channel.